

COMPUTER SIMULATION MODEL FOR DETERMINING DAMAGE
TO THE HUMAN CENTRAL NERVOUS SYSTEM

ABSTRACT OF THE DISCLOSURE

A computerized model simulates the human spinal cord and makes it possible to draw inferences about the probability of future injury or the likelihood that specific injuries occurred in the past. The spinal cord is modeled by a plurality of two-dimensional graphs formed of a large number of finite elements. The two-dimensional graphs are stacked in positions corresponding to the measured positions of the spinal cord at various vertebral levels of a patient. The stacked graphs yield a three-dimensional model, which may be compared with similar data taken from other patients. The model may include the simulation of stress, applied to all or part of the spinal cord, resulting in a perturbed three-dimensional model which may again be compared with similar data taken from patients having known injuries. The invention can therefore be used, among other things, to verify claims of spinal injury as a result of vehicular or sporting accidents.